Investment negotiation between academic entrepreneurs and private equity investors

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INVESTMENT NEGOTIATION BETWEEN ACADEMIC ENTREPRENEURS AND PRIVATE EQUITY INVESTORS: EXAMINING FACTORS AFFECTING INVESTMENT DEAL OUTCOMES

Geoff Gregson
University of Edinburgh, geoff.gregson@ed.ac.uk

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Geoff Gregson, University of Edinburgh, UK

Abstract

The low level of private equity investment supporting university spinouts (USO) has attracted much attention in recent years. While literature suggests "poor investor-readiness" on the part of academic entrepreneurs and incomplete assignment of university intellectual property (IP) to USOs as constraints to investment, few studies have examined the effects of the *deal making process* itself on investment deal outcomes. This study examines the investor readiness profile of USOs prior to investment negotiation and assesses the deal negotiation tactics deployed by academic entrepreneurs, during negotiation with both universities and investors, to consider how they influence investment deal outcomes. Findings lend support to previous studies suggesting a weak investor-readiness profile of university spin-outs. However, this study finds a much more prominent role played by academic entrepreneurs in contributing to the weak investor-readiness of their enterprises and identifies adverse effects of poor negotiating tactics. The paper suggests the need for third-party "term-sheet" coaching for academic entrepreneurs and much earlier deployment of independent legal advice on deal structuring and deal negotiation.

Introduction

Academic entrepreneurs face a daunting task in securing private equity investment for their university spin-out enterprises (USO). Literature identifies poor 'investor readiness' as a key factor impeding access to investment, which may include: a lack of commercial expertise of the entrepreneur; incomplete technology development; poor understanding of the market for the product or technology; and unrealistic expectations on the venture's market value (e.g. Mustar et al, 2008; Lerner, 2005; Lockett and Wright, 2005; Binks et al, 2004; Di Gregorio and Shane, 2004). Another factor relates to contentious issue of IP ownership, transfer and equity positioning between academic entrepreneurs and universities that may impact negotiations and deal terms between academic entrepreneurs and investors (Bradley *et al* 2004; Lambert 2003).

This paper distinguishes itself from previous studies by suggesting another factor affecting access to investment – the active role of the academic entrepreneur in the investment deal making process. The paper also distinguishes itself from studies on private equity investment that have focused on flows of investment (Wright et al, 2006; Mason and Harrison, 2004) or on investment criteria used by investors (Kollmann and Kuckertz, 2009; Lerner, 2005). Few studies have examined investment criteria and deal negotiation in a research environment or with the academic entrepreneur as central focus (Lerner, 2005; Clarysse and Moray, 2004). The confidential nature of investment deal negotiations has also challenged study in this area.

The paper draws upon findings from a two-year study where access to the legal files of USO investment deals has been made possible. The study involves a partnership with a well-respected

legal firm actively engaged in legal intermediation of investment deals involving academic entrepreneurs, universities and private equity investors. The study focuses attention on the final phase of the investment decision process that intersects deal negotiation, deal structuring and deal conclusion (Kollmann and Kuckertz, 2009; Wright et al, 2004; Gompers and Lerner, 2000).

Three research themes guide the paper. First, what are the most common deal terms amongst successfully concluded USO investment deals involving academic entrepreneurs and private equity investors? We define a "successful" deal to include: the transfer of intellectual property (IP) from the university to the USO; full independence of the USO from the 'parent' university; and formal agreement (i.e. legally-intermediated) between a USO and private equity investor to investment deal terms. Second, wwhat are the key contentious deal-making negotiating points between academic entrepreneurs and universities and between academic entrepreneurs and investors? We postulate that the deal making process will be strongly "investor driven" and wish to ascertain how the level of investor-readiness of USOs in the study may affect deal terms. Third, we wish to establish the role of legal intermediation in a USO deal and how legal advice affects deal terms between entrepreneur and investor? The next section provides a review of relevant literature and theoretical constructs, followed by discussion of the research methodology and then discussion of research findings. In the final section, we present a summary of results and recommendations on improving the deal-making process for USOs.

Review of Literature

University Spin-outs (USO)

University spin-out enterprises (USO) are widely acknowledge as a mechanism for transferring university-generated technology and intellectual property (IP) to the market, amongst other mechanisms that include licensing IP, university-industry research collaborations, consulting and property initiatives such as incubators and science parks (Rothaermel and Thursby, 2005b; Clarysse and Moray, 2004). Pirnay *et al.* (2003; p. 356) defines a USO as "a new firm created to exploit commercially knowledge, technology or research results developed within a university."

Over the past two decades, European universities have undergone a noticeable shift towards creating more USOs to exploit their research results (Etzkovitz, 2008; Clarysse and Moray, 2004). This shift is attributed to a number of factors that include: increasing expectations by policy-makers and public funding agencies that universities contribute more to regional economic development (Rothaermel and Thursby, 2005a, 2005b; Lambert, 2003; Birley, 2002); difficulties in licensing new scientific discoveries for which markets are undetermined (Wright *et al* 2004) and the desire by universities and academic inventors to capture a greater share of economic return from new discoveries (Lambert 2003; Vohora et al 2003; Birley 2002). By contrast, licensing is the preferred method for exploiting intellectual property (IP) in US universities (AUTM 2005).

Despite the high profile of USOs, evidence suggests that USO activity yields poor results. Lerner (2005), in an assessment of US spin-off activity over two decades (1985-2005), identifies that most USOs yield poor returns, with a small sub-set generating the bulk of returns. A study of Scottish Universities (1997-2005) found that of the approximately 200 USOs created (amongst thirteen universities), 30% are no longer trading and 55% employ less than 10 people, with only 15% employing more than 50 people (Targeting Technology, 2008). A number of factors are identified as contributing to poor USO performance. Mustar et al (2008) in their examination of European USO activity (1995-2005), suggest two contributing factors: 1) an underestimation of various difficulties in commercialising research through the USO route; and 2) the multiple actors

involved in USOs - at national, regional, institutional and spin-off firm levels - have difficulties in defining their strategies.

The role of TTOs is also suggested as contributing to poor USO results. A number of large cross-university studies highlight contentious issue of IP ownership, transfer and equity positioning between academic entrepreneurs and universities in the UK (Howells et al, 1998; Cripps et al, 1999). A commonly cited issue relates to the lack of uniformity and standardisation among universities regarding their IP transfer and ownership policies and practices which may act as a disincentive for academics to create spin-outs or limit their ability to attract external investment (Lambert, 2003; Bradley et al, 2004). Overemphasis on generating high numbers of USOs to improve output statistics is also suggested as a contributing factor as to why many European USOs originate as and remain small enterprises (Mustar et al, 2008; Heirman and Clarysse, 2007). Mustar et al (2008) suggest that European universities need to develop IP and patent strategies to ensure that IP is clean, well defined and protected before trying to raise commercial interest.

A widely acknowledged funding gap contributes to poor USO results, with a common complaint of private investors seeking to fund USOs being the lack of *investor readiness* compared to other early stage ventures (Mustar et al, 2008; Lockett and Wright, 2005; Binks et al, 2004; Douglas and Shepherd 2002). Investor readiness may include generating a prototype technology, securing an experienced management team and demonstrating early sales (Wright et al, 2004).

Weak investor readiness is identified with a poor understanding of the market value of the technology and unrealistic expectation on the company's value (e.g. Binks et al, 2004; Di Gregorio and Shane, 2004; UNICO, 2004; Birley, 2002). Wright and al. (2006) suggest that information asymmetries between the entrepreneurial team and the investors are likely to be extremely high in the case of academic spin-offs, since correct assessment of the technical feasibility and the market potential of early-stage technologies exiting from university laboratories might prove extremely difficult and risky. Lerner (2005) suggests that many academic entrepreneurs lack realistic expectations about their ventures arising from their general lack of commercial experience.

A "resource-based perspective" is relevant to the notion of investor readiness when suggesting that lack of resources and capabilities and weak social capital and legitimacy in the market limit universities and academic inventors in successfully commercialising IP and attracting private investment (Hoang and Antoncic, 2003; Douglas and Shepherd 2002; Shepherd *et al* 2000). USOs are also seen to possess limited legitimacy, a critical feature for new venture success to overcome liabilities of newness.

Investment Decisions and Deal-Making

The notion of investor readiness relates not only to the particular characteristics of the USO (e.g. technology/product, founding team, market, investment requirements, etc.) but also to the strategies, intentions and actions of the academic entrepreneur(s) in negotiating with universities and investors and securing investment. All three sets of actors are often involved in the final phase of the investment decision process that intersects deal negotiation, deal structuring and deal conclusion (Kollmann and Kuckertz, 2009; Wright et al, 2003; Gompers and Lerner, 2000). Wright et al (2004) suggest that an academic entrepreneur's ability to reduce the risks for investors and to generate sufficient credibility early on may facilitate greater commitment by investors and result in more substantial initial resource endowments. They identify four factors that determine the ability of USOs to attract sustainable returns: the level of resources; level of capabilities; level of social capital (networks) and the level of involvement by investors. They suggest that the amount

of financing which new USOs initially receive acts to facilitate or constrain future growth and development strategies.

Private equity investors commonly following a "cycle" of investment activities that include deal origination, screening, evaluation and deal structuring (Kollmann and Kuckertz, 2009; Wright et al, 2003; Gompers and Lerner, 2000). Tyebjee and Bruno (1984) suggest that investors deploy five steps: deal origination, where promising investments are discovered; deal screening, where an overabundance of opportunities are reduced; deal evaluation, where opportunities are critically assessed; and finally, deal structuring, where the investor and entrepreneur clarify and negotiate the terms of the deal. One question relates to where the investor first engages the academic entrepreneurs and/or university in the cycle and where engagement shifts from informal, non-committed chat to more formal, committed discussions. Lerner (2005) identifies the need for investors to demand a return commensurate with the high risk inherent in very early stage academic projects, resulting in a substantial demand for equity.

Wright et al (2007) suggest that many investors perceive that universities fail sufficiently to understand their requirements or to present investor-ready proposals for the funding of USOs; thus few investors, particularly VC firms, have developed links with universities and even fewer with more than one university. Lerner (2005) suggests that the best TTOs are able to play an "honest broker" role, where relationships with investors are cultivated and where the TTO reaches out to particular investors with investor-ready opportunities. He suggests that the effectiveness of this role critically depends on the experience and skill levels of TTO staff. The issue of incentives for TTO staff relates to concerns that TTOs may not have the remuneration necessary to attract those individuals with the entrepreneurial capabilities and experiences to stimulate and develop USOs.

Theoretical Constructs

In this paper, we identify the absence of appropriate theoretical models to explain the USO deal making process. We suggest a number of theories, such as agency theory, asymmetrical information and theories of the firm: e.g. institutional theory, resource-based theory, nexus of contract theory and neo-institutional theory that may be appropriate. For example, we suggest that the deal-making process involves at least one social institution, the university, which undertakes particular practices but does not generate market influence and power as suggested in neo-institutional theory. The university may deploy specific rules, norms and activities that can enable or constrain the USO deal-making process, such as in negotiating IP rights (e.g. Langlois 1991).

The role of the university in relation to the academic entrepreneur may also generate a "co-ordination problem" (e.g. Casson, 1990) when considering the need to quickly establish a single negotiating partner for the investor. Nexus of contract theory would suggest that any adversarial relationship between academic entrepreneur and university creates a co-ordination problem affecting investor readiness of the USO in addition to signalling potential risk and uncertainty to the investor (e.g. Jensen and Meckling 1992; Langlois 1991). We also suggest that academic entrepreneurs face an "incentive problem" when attempting to spin-out and seek investment, given that they must engage with a university that is both their employer and negotiating partner.

Finally, we suggest that asymmetrical information related to the value and potential value of particular intangible resources (e.g. human skills, knowledge, future plans on product development, etc.) may favour the academic entrepreneur in negotiating with investors (Dean et al 1998; Chandler and Hanks 1994; Penrose, 1959). However, without access to investment, most USO

are unable to deploy such resources, favouring the investor to negotiate on the existing value and future value of such resources, in the context of potential follow-on investment in uncertain future market conditions (e.g. Amit and Schoemaker 1993). The value of experience from engagement in previous USO deals may further favour investors in dealing with asymmetrical information in future USO deal negotiations.

Background to Research

We identify four problematic limitations in previous research that we wish to address in our study. First, few studies have examined the investment deal-making process for USOs; in part because of the confidential nature of such information and because much data from universities are available primarily as measurable outputs, i.e. number of spin-outs, number of patents generated, number of technology licenses (Mustar et al, 2008; Wright et al, 2007; DiGregorio and Shane, 2003; Thursby and Thursby 2002). Second, various attempts at extrapolating investment deal data have relied primarily on self-disclosed survey data (e.g. Mason, 2009; Wright et al, 2006). Third, little attention has been paid to the academic entrepreneur and the effect of his/her deal negotiating activities on deal outcomes. Fourth, little attention has been paid to the influence and effects of legal intermediation in the USO deal-making process. In consideration of these observations, we identify the need to examine evidence on the deal-making process to establish the scale and scope of USO deal-making activity and to consider the relationship between academic entrepreneurs, universities and investors as active participants in the deal-making process. To guide the research, we posed five interrelated research questions:

Q#1: What are the 'pre-investment' characteristics of university spin-out enterprises and what affect do these characteristics have on investment deal outcomes?
Q#2: What are the investment negotiation tactics deployed by academic entrepreneurs in deal negotiations with universities and with investors and what affect do these tactics have on investment deal outcomes?
Q#3: What are the most 'contentious' terms in negotiation between academic entrepreneurs, universities and investors and what affect do these tactics have on investment deal outcomes?
Q#4: How do academic entrepreneurs make use of legal advisors and what role does formal legal intermediation play on deal outcomes for the academic entrepreneur?
Q#5: What are the common contract terms agreed upon by academic entrepreneurs and investors in concluding investment deals?

To address these questions, we undertook an investigation of a prominent legal firm active in legal intermediation between USOs, universities and private investors (to be referred to as LWS). The private investors were exclusively described as "business angels", private investors who provide risk capital to new and growing businesses in which they have no family connection (Mason and Harrison, 2004). Business angels invest in what is termed the "equity gap," providing amounts of finance often beyond the ability of entrepreneurs to raise from their own resources but usually below the minimum investment threshold of venture capital funds; a figure suggested that is in excess of £1m in the UK and $5m in the U.S. (Sohl, 2003).

The next section provides an overview of the qualitative research method used in this study. We then present our findings and discuss the practical implications of our results. Finally, we offer conclusions to the paper and recommendations along with limitations to the research.

Methodological Approach

To answer the research questions and address the methodological problems outlined above, two stages of data collection are deployed which represent different sources of empirical data from which to better examine the investment deal-making process (Strauss 1997; Van de Ven et al 1984). We follow guidelines suggested by Miles and Huberman (1984) and Glaser and Strauss (1967) and engage in sequential data generation and analysis. Our first data are generated from examining the legal case files of 17 investment deals brokered by a prominent legal firm engaged in the study; 7 deals where the client is an academic entrepreneur and 10 deals where the client is an investor. A 'deal template' is developed to review each file and to facilitate comparisons between investment deals.

The template includes USO profile, identified shareholders and directors, contracts, financial and investment criteria, intellectual property (IP) and other assets, professional service provision and fees, management structure, deal structure and 'contentious issues'. Legal file analysis included interviews with two senior partners who were actively engaged in the legal intermediation process of these deals. To ensure confidentiality of its clients, LWS requested that no detail of client profiles (USO founders and investors) would be reported in the study; therefore, profile characteristics are not included. Our second stage of data collection deploys the deal template to survey a wider sample of 33 academic entrepreneurs and to generate a broader data from which to explore our research questions. The sample was generated from a list of 150 active (i.e. trading) spin-outs from universities across the UK, with spin-outs identified from lists supplied by 13 member universities of the Russell Group in the UK (response rate of 22%). The survey asks spin-out founders to make explicit the actual spin-out deal, post-deal activity and subsequent performance of the spin-out. The survey's 60 questions also examine factors contributing to spin-out formation, professional service provision, the deal structure and contentious issues, with issues ranked using a Lickert Scale (1 being least contentious, 5 being most contentious).

Findings

Stage 1: Legal Files

Figure 1 identifies the common "pre-investment" characteristics of 7 investment deals mediated by the legal firm LWS on behalf of USO entrepreneurs (% of affirmative responses shown). We postulate that five "pre-investment" characteristics are likely to have a positive effect on deal outcomes, as noted on the far right column of Figure 1 and suggest that "informally" negotiated deal terms between USO founder and investor could have a negative effect on the actual deal outcome. We find that all USO entrepreneurs in the sample had already decided on the spin-out as a preferred route to exploitation of their technology before instructing LWS to conclude the legally-mediated deal (LMD). Findings show that all 'pre-investment' USOs were recipients of seed funding. Some evidence suggests the potentially negative effect of imposed seed funding deadlines on deal outcomes. In Case 2 of Figure 1, the deadlines imposed by public funding acted as a driver for the date of deal conclusion and in turn contributed to the founder accepting less favourable deal terms proposed by the university, according to legal file notes.

In 86% of cases, USO entrepreneurs had negotiated deal terms, albeit informally, with investors prior to legal advice. In all cases, informal deal terms between founder and university, including licensing terms, were negotiated before the LMD. While we expect that such negotiations between entrepreneur and university are likely to have a positive effect on deal outcome, we are

uncertain as to the effect of informal founder-investor negotiations on deal outcome, given that legal intermediation may influence negotiation positions.

Figure 2 identifies key negotiation issues and outcomes of the 7 investment deals. We postulate the "expected" effect of response results on the deal outcome in the far right column. Findings show that equity stake is the most prominent negotiation issue for USO entrepreneurs in a legally-mediate investment deal, with 86% seeking to negotiate a more favourable equity stake and/or royalty rate with universities. However, no universities negotiated away from their original positions. Not surprisingly, LWS was requested to negotiate on behalf of entrepreneurs to improve the terms of licensing provisions with universities. Figure 2 shows that over half (57%) of universities did negotiate with entrepreneurs on 'other' terms of licensing. In 71% of cases, LWS was requested by entrepreneurs to negotiate for a larger equity stake with investors but that no investors were willing to negotiate on equity. In all cases, LWS was requested to negotiate on behalf of entrepreneurs to reduce their level of liability with investors and in 71% of cases, investors negotiated away from original positions to reach a compromise position.

Figure 2 shows that none of the deals were concluded in the originally agreed time period (as proposed by entrepreneurs). Legal file notes identify that in all cases, LWS was required to provide more extensive legal work beyond *"simply arranging necessary legal documentation for signature*." Additional legal work included: 1) putting in place appropriate service contracts with entrepreneurs; 2) securing IP assignations from 3rd parties involved in IP development. In each case, entrepreneurs proposed to LWS a minimal time period, on occasion as little as four days, between the date that LWS was instructed by the entrepreneurs to work on the deal and the anticipated and/or actual data of deal conclusion.

Figures 1 and 2 identify two potential issues regarding the level of investor readiness of USOs that may adversely impact investment deal outcomes. Findings show that entrepreneurs significantly underestimate the amount of legal advice they require to conclude a deal. This may reflect a degree of over-optimism on the part of entrepreneurs to secure a deal as well as a lack of commercial awareness on what is entailed in completing a legally mediated investment deal. The second issue is that entrepreneurs appear to set unrealistic expectations on enhancing their equity stakes during formal negotiations that may impact final deal terms - even after "informal" deal discussions have been undertaken (in all cases with universities; in 86% of cases with investors).

Figure 3 identifies investment deal characteristics of 10 spin-out deals mediated by LWS on behalf of investors (affirmative responses shown). We postulate the "expected" effect of response results on the deal outcome in the far right column. Figure 3 shows that all USOs were incorporated prior to the legally mediated deal and that none had received private investment at time of spin-out. Findings show that only 40% of USOs possessed "adequately secured IP", meaning that IP ownership and/or IP assignation terms had not been concluded between the USO and university prior to the legally mediated deal (with LWS acting on behalf of investors). Figure 3 shows that universities were represented in all deals, only 20% of deals were concluded in the agreed time period (as proposed by investors) and that 90% of investors requested extensive additional provisions in the investment document.

Comparison between entrepreneur and investor legal files reveal that investors demand more legal service provisions *a priori* in terms of drafting of additional provisions and agreements. We suggest a number of reasons for this. First, in 60% of cases, IP was not properly secured, either from the university and/or in terms of complete and legal assignation of original IP. Second,

documentation provided by USO entrepreneurs varied in terms of completeness, requiring further review by investors and their legal advisors, contributing to delays in concluding the deal.

Figure 4 summarises from the 17 legal files the most frequently cited investment contract terms that investors required from USO entrepreneurs and compares the differences in affirmative responses of entrepreneurs and investors to suggest suggesting potentially contentious issues (far right column). Compulsory transfer provisions (CTP) are identified by both entrepreneurs and investors as the most contentious issue. CTPs are usually drafted to: allow founder to retain shares or percentage of shares after a defined period of time (providing that these shares become non-voting shares); and/or set the price of shares being transferred dependent on the length of time the founder has been with company, calculated on sliding scale or otherwise. The majority of USO entrepreneurs (71%) found it inequitable to be forced to transfer their shareholdings when they are no longer involved with company. Investors, on the other hand, were not willing to comprise on this contract term. However, different approaches to CTPs were taken in two cases (10 and 13) due to resistance to these provisions from the entrepreneurs in question.

The second contentious management-related contract term are warranties, which involve provisions binding entrepreneurs to spin-out performance. The majority of entrepreneurs (76%) were concerned with being warranted "in so far as they are aware" or "to the best of their knowledge and belief" in the running and performance of the company. The implications of granting such warranties were more directed to those who would have little actual involvement in day-to-day activities of the USO. Investors were generally willing to accept revision of warranty terms in the Investment Agreement. On this issue, investors appeared more willing to negotiate away from their preferred position, such as by excluding certain individuals from certain warranties to be granted or renegotiating the limit of the liability of the warrantors.

An analysis of legal fees generated from the 17 file cases reveal poor financial returns to LWS in representing either spin-out entrepreneurs or investors. Indeed, LWS "wrote off" a significant amount of time in dealing with entrepreneurs and investors; on average, equivalent to between 12% and 30% of the total fee charged. In the majority of cases, the final terms of the deal altered from the terms originally envisaged by either party. We asked LWS why it continues to provide legal services for university spin-out deals despite a financial loss. LWS states it is because of the intangible benefits to its reputation. LWS provides legal services to three prominent UK universities, from where the majority of USO clients have emerged. Most investor clients are also involved in other businesses in which they retain LWS services. This suggests a certain level of "additional" support around the deal-making process offered to university spin-outs and investors that is not captured by formal market exchange.

We find that the majority of contract term conditions between investors and USO entrepreneurs are not contentious (Figure 4). Most terms are elements of a standard legal investment agreement. However, we suggest that the overall level of contract terms place considerable conditions on USO entrepreneurs, particularly those with limited commercial experience. While investors display an overriding interest in protecting their investment, USO entrepreneurs appear willing to make concessions on a number of issues in order to secure the USO's future financial position. In almost all cases, entrepreneurs conceded on contract terms during deal negotiation rather than investors. Findings suggest that the private equity investor possesses a stronger bargaining position than USO entrepreneurs in negotiating and concluding an investment deal, even when USO entrepreneurs are represented by competent and reputable legal advisors. While investors are always able to walk

away from negotiations if terms are not conceded, investors appear willing to negotiate away from their preferred position on warranties to secure a deal, but are not willing to concede on compulsory transfer agreements.

Stage 2: USO Survey

Figure 5 provides a summary of USO survey responses around three sets of relationships in the deal-making process: entrepreneur-university, entrepreneur-investment, and entrepreneur-legal service provision. A description of these relationships is offered below.

Entrepreneur-university: One set of questions asked entrepreneurs about their use of legal advice; 63% of respondents obtained legal advice prior to the spin-out deal being formally agreed with the university (21% prior to discussions over IP; 21% during initial discussions with university over IP commercialisation options; and 21% the stage of their negotiation of heads of terms (heads of terms, referred also as letters of intent, memoranda of understanding or heads of agreement, sets out the terms of the commercial transaction agreed in principle between entrepreneur and the university). This suggests that a certain amount of discussion regarding spin-out deal terms will already have taken place between the university and entrepreneur prior to legal advisers being instructed to conclude a deal. We find that a large proportion of entrepreneurs that obtained legal advice in the latter stages of the spin-out process consider, on reflection, that legal advice should be obtained at an earlier stage in the process, costs permitting. By comparison, the legal file analysis found that 100% of entrepreneurs had chosen "spin-out" as the preferred commercialisation option prior to legal advise and that 83% of those seeking investment had negotiated deal terms with investors and licensing terms with the university, albeit informally, prior to employing legal advice.

We find that the majority of entrepreneurs indicated they concluded an equity-only deal with the university and obtained a full exclusive licence of the IP. In 65% of cases, universities did not seek to protect their equity interest against dilution where investment was secured at spin-out. While 79% of entrepreneurs report that their expectations regarding equity were met, entrepreneurs identify equity between themselves and the university and the terms upon which the IP was to be transferred to the spin-out company as the two most contentious issues in deal-making (Figure 6). We suggest that equity issues are contentious because of the level of uncertainty over TTO equity positions and associated need for negotiation and potential conflict. Entrepreneurs identify the need for universities to be more transparent in respect of their policies and procedures relating to spin-out company formation; 89% of respondents consider that information/guidance made available by universities to academic entrepreneurs needs to be improved.

Entrepreneur-investment: Findings reveal that 70% of spin-out companies secured equity investment at spin-out. While 86% of entrepreneurs indicate that they first sought to secure/have secured grant funding prior to seeking external equity investment, the effect of successful receipt of grant funding on securing private equity investment cannot be confirmed here. Entrepreneurs identify that direct contact between the company and investors is the most effective way of securing equity investment. This finding offers strong evidence that the TTO is not perceived to be an effective medium to securing external investment. Factor rated highest by those securing external investment was "*direct contact by the spin-out to investor*" (57%), followed by "*direct contact by investor to spin-out*" (38%).

Founder-legal service provision: We find that 74% of entrepreneurs disagree that legal advisors should lead deal negotiations. At the same time, 65% of respondents disagreed that

the role of legal advisers is only to draft the deal documentation. This suggests that founders are looking for legal advisers to take a proactive role with respect of the services they provide, but wish to retain control of the deal negotiation process. An interesting result is that 93% of founders, in hindsight, would again instruct legal advisers with the same advice in connection with the original spin-out company formation process. This is in contrast to findings from the legal files, which revealed that, during deal negotiation, entrepreneurs were instructing legal advisors to negotiate more favourable deal terms. One explanation is that survey respondents reflect hindsight on this process (and that respondents are successful USOs), while the legal files reported deal processes at the time they occurred.

Figure 6 summarises entrepreneur perceptions of the most contentious issues arising during their negotiations with both universities and investors. The two most contentious issues for entrepreneurs in deal-making with universities are over: 1) the equity stake to be granted to the university; and 2) whether the university would grant an assignation or a license of the technology to the spin-out. Identification of equity stake as the key contentious issue supports findings from the legal file review on entrepreneur clients. The two most contentious issues with investors are over: 1) warranty provisions; and 2) the equity stake to be granted to investors. Warranty provisions as the most contentious issue with investors supports findings from the legal file review. However, compulsory transfer provisions (CTPs) are not identified as a contentious issue by entrepreneurs in the survey (as it is for investors in the legal file review). For entrepreneurs in the survey, equity stake and three other investor-driven conditions are rated more contentious that CTPs. The survey also asked founders to consider whether the issues they considered contentious at the time of spin-out were, in hindsight, "worth fighting for." Not surprisingly, 89% of respondents considered that the issues were worth fighting for; suggesting that some of these issues may have been negotiated in favour of the entrepreneur.

Conclusions

Our findings lend support to previous studies suggesting a weak 'investor-readiness' profile of university spin-outs (e.g. Mustar et al, 2008; Wright et al, 2006). However, we find a much more prominent role played by academic entrepreneurs in contributing to the weak investor-readiness status of the enterprise and identify adverse effects of poor negotiating tactics on investment deal outcomes. Findings suggest that attempts by most academic entrepreneurs to re-negotiate or enhance their equity stake and/or royalties during legal intermediation - beyond that discussed during informal negotiations - may provide concessions on 'other' less important deal terms but may have the unintended effect of further shifting the balance of negotiation power to investors.

Comparison between academic entrepreneur and investor legal files reveal that investors demand more legal service provisions *a priori* in terms of drafting of additional provisions and agreements. We suggest a number of reasons for this. First, in 60% of cases, IP was not properly secured by the academic entrepreneur from the university or in terms of complete and legal assignation of original IP. Second, documentation provided by academic entrepreneurs prior to the deal varied in terms of detail and completeness, requiring further review by investors and their legal advisors. These factors appear to delay concluding the deal, whether or not the client is founder or investor. At the same time, expectations by academic entrepreneurs to complete a deal quickly (e.g. arising from public funding deadlines) were also shown to result in less favourable deal terms from universities, which in turn affected valuations and deal outcomes from investors.

Investors appear to strengthen their position as negotiations progress and end up being predominant in setting ownership terms, deal conditions and associated time periods to conclude the deal. The study suggests a considerable advantage possessed by investors in securing favourable deal terms when investing in USOs. This advantage arises from four identified and contributing factors: 1) the inadequacies of commercial credibility by spin-out entrepreneurs; 2) the lack of sufficient deal making expertise by entrepreneurs; 3) the advantage of time favouring the investor; 4) a low level of competition for deals by other investors; 5) a generally neutral or unfavourable attitude of investors in dealing with TTOs in the deal making process.

Findings show that investors more than universities are willing to negotiate their equity stake to reach a compromise position between themselves and entrepreneurs, although investors identify valuation of IP as one of the most contentious issues in deal-making with both founders and universities. Investors suggest that sole reliance on the value of the IP or patent in negotiations eventually weakens the bargaining position of entrepreneurs and universities, as investors negotiate on the basis that these parties are not able to apply IP into a commercial application without investor support. Investors were mixed in terms of valuation for the purposes of negotiating deal terms, ranging from using a model of discount to peer groups in the context of current market conditions to the potential exit value of the company and risks to exit.

One question arising from the study relates to the most appropriate time for academic entrepreneurs to obtain their own independent legal advice (i.e. from university advice) in connection with an investment deal. Our study identifies legal advisors playing a prominent role in negotiating a deal on behalf of spin-out founders, as most academic entrepreneurs are unfamiliar with the particulars of an investment term sheet. Although obtaining early advice is important - prior to negotiations taking place with the university and investors, this might not be practical, given founders' resource constraints. Findings suggest that legal advice should be sought by academic entrepreneurs *at term sheet* rather than later, i.e. *post-term sheet* with investors.

Findings identify investors, in all cases, seeking their own legal advice post-term sheet. Further, legal advisers appear to have no role in negotiating a deal on behalf of investors. Findings also suggest that, while investors seek legal advisers that are recognised expertise in the field, investors are also price-sensitive; particularly so if legal advisors are not negotiating on behalf of investors.

We suggest that recommendations made by Lockett et al (2002) some time ago that further development of a mutual understanding of the needs and skills of each party in an investment deal - academic entrepreneur, university and investor - remains an issue. Our findings suggest the need for third-party coaching of academic entrepreneurs in engaging in the investment decision process, i.e. deal negotiation and deal structuring rather than simply stating that 'investor-readiness' be prioritised. In particular, coaching on negotiation tactics and highlighting strategies to deploy between informal and formal deal negotiations would appear to be highly relevant.

Investors perceive that universities should be doing more to facilitate commercialisation and simplifying spin-out deal making. In this respect, a major issue is the apparent lack of established relationships between the investment and academic community. Many respondents stated that the nature of the relationship that investors have with universities varies from university to university and investor to investor. In this respect, it would appear there are human resource and social interaction considerations to improve engagement by university TTOs to facilitate links with investors. Therefore, universities should consider introducing initiatives to ease interaction between investors and their academic inventors.

Finally, universities may wish to re-consider negotiating spin-out deal terms with academic entrepreneurs directly. Our findings suggest a level of conflict of issue and the potential for a breakdown in relations between academic entrepreneurs and the university. If universities did not negotiate deal terms directly with academic entrepreneurs, this would ensure that entrepreneurs would seek appropriate and timely independent advice in connection with the spin-out deal. Consideration should be given to the feasibility and benefits of introducing a memorandum of understanding between legal advisers and universities, setting out the terms upon which parties would contract in relation to spin-out deals. Further revisions of the paper will elaborate on theoretical contributions from the findings, along with clearly articulated limitations to the study.

CONTACT: Geoff Gregson; geoff.gregson@ed.ac.uk; (T): +44 131 650 8068; University of Edinburgh Business School, 29 Buccleuch Place, Edinburgh, UK, EH8 9JY.

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Figure 1: 'Pre-Investment' Characteristics of USO: Client as USO Founder (n=7)

USO Characteristics (Pre-LMD*)	1	2	3	4	5	6	7	Affirmative Response %	'Expected' Effect on Deal Outcome (for USO)
USO has been incorporated prior to LMD	-	-	-	-	-	-	-	0	Positive
USO received seed funding prior to LMD	Y	Y	Y	Y	Y	Y	Y	1	Positive
USO founder chosen "spin-out" as preferred route before LMD	Y	Y	Y	Y	Y	Y	Y	1	Positive
Deal terms between founder & university discussed & negotiated before LMD	Y	Y	Y	Y	Y	Y	Y	1	Positive
Deal terms between founder and investors discussed & negotiated before LMD	Y	Y	Y	Y	-	Y	Y	0.86	Uncertain

(*LMD refers to legally-mediated deal)

Figure 2: Key Negotiation Issues and Outcomes: Client as USO Founder (n=7)

Negotiation Issues & Outcomes (at LMD)	1	2	3	4	5	6	7	Affirmative Response %	'Expected' Effect on Deal Outcome (for USO)
Founder-University Founder seeking to negotiate more favourable equity, royalty with University	Y	Y	Y	Y	Y	Y	N	0.86	Negative
University willing to negotiate away from position on equity stake or royalty rates	-	-	-	-	-	-	-	0	Negative
Universities willing to negotiate on 'other' terms of licensing	Y	-	Y	Y	-	-	Y	0.57	Positive
Founder- Investor Founder seeking to negotiate more favourable equity stake with investor	Y	Y	Y	-	Y	Y	-	0.71	Uncertain
Investors willing to negotiate away from position on equity stake	-	-	-	-	-	-	-	0	Negative
Founder seeking to reduce level of liability downward with investor	Y	Y	Y	Y	Y	Y	Y	1	Uncertain
Investors willing to negotiate on 'other' terms of deal	Y	-	Y	Y	-	-	Y	0.71	Positive
Length of Negotiation LMD was concluded in agreed time period (as proposed by founder)	-	-	-	-	-	-	-	0	Negative

Figure 3: Investment Deal Characteristics: Client as Investor (n=10)

Investment Deal Characteristics (LMD)	1	2	3	4	5	6	7	8	9	10	Affirmative Response %	'Expected' Effect on Deal Outcome (for Investor)
USO has been incorporated prior to *LMD with investor	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	Positive
USO has received private equity university	-	-	-	-	-	-	-	-	-	-	0	Positive
USO adequately secured IP (either from university or by legal assignation)	-	-	Y	-	Y	Y	-	Y	-	-	0.40	Negative
University legal team is involved in LMD	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	1	Uncertain
LMD concluded in agreed time period	-	-	Y	-	Y	-	-	-	-	-	0.20	Negative
Investor has requested "extensive legal provisions" in Investment document	Y	Y	-	Y	Y	Y	Y	Y	Y	Y	0.90	Uncertain

Figure 4: USO Investment Contract Terms Required by Investors LMD Negotiations (n=17)

Management-related contract terms	Investor Response %	Founder Response %	Contentious Issue?
Service contracts to be put in place for founders	1	1	No
Founders agree to restrictive covenants placed in Investment Agreement – namely 'not to be concerned in any competing business'	1	1	No
Remuneration committee to be constituted to determine remuneration of directors and senior employees	0.65	0.65	No
Compulsory transfer provisions of directors and company employees are inserted in the Articles of Association	1	0.29	**Yes**
Investors have ability to appoint an investor director or an observer	1	1	No
Certain decisions shall not be made by founders without the consent of investor, investor majority or investor director	0.71	0.71	No
Founders agree to warranties that bind founders to USO performance	1	0.24	**Yes**
Company willing to move operating base to location favoured by investors	0.29	0.29	No
Investment-related contract terms			
Investors obtain a preference in return of assets on liquidation of company	1	1	No
Investment made in tranches, further tranches based on performance milestones	1	1	No
Investors can transfer shares to their group companies without restriction	1	1	No
Prescribed minimum % of distributable profits to be offered by company/year	0.77	0.77	No
Fee for prescribed monitoring and/or arrangement to be paid by USO	0.41	0.41	No
Investor's legal fee to be capped by LWS (and paid by USO)	0.88	1	**Yes**

Figure 5: USO Survey Results (n=33)

% of spin outs that…:	Response %
(Founder-university)	
obtained legal advice prior to USO deal being formally agreed with university (i.e. prior to heads of terms)	0.63
stated that the amount of equity that they expected founders to collectively get was the amount of equity they collectively obtained in the spin-out company	0.79
stated that the amount of equity that they expected the university to obtain was consistent with the amount of equity that the originating university actually obtained at conclusion of the spin-out deal.	0.89
stated their university did not seek to protect its equity interest against dilution when external investment was secured	0.65
stated that information/guidance made available by universities to academic inventors needs to be improved	0.89
(Founder-investment)	
sought/obtained public grant funding	0.86
received equity investment at time of spin-out	0.70
disagreed that direct contact by the TTO to investors contributed to spin-out securing external investment	0.95
(Founder-legal service provision)	
disagreed that legal advisers should lead deal negotiations	0.74
would instruct legal advisers with the same advice in connection with the spin-out company formation	0.93
agreed that legal advisers could usefully assist founders in other matters of relevance (introductions to investors)	0.81
agreed that legal advice obtained was excellent	0.40

Figure 6: 'Contentious Issues' in Deal-making: Perceptions of Spin-out Founders (n=33)

Extent to which respondents considered the following to be a 'contentious issues' in USO negotiations (5-most, 1-least):	Weighted average
equity stake to be granted to the university and founders	3.70
assignation vs. licence to the spin-out company	3.16
Warranty provisions	3.00
equity stake to be granted to investors	2.80
Royalty rate payable to the university	2.41
Management remuneration	2.39
Consent of investors/investor director to certain issues	2.26
Composition of the board	2.08
The founder(s) leaving the university (e.g. secondment terms)	1.63
Compulsory transfer provisions	1.48
Other factors in the spin-out deal negotiations	1.18